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SUBJECT: NUCLEAR POWER MEETINGS IN JORDAN

REF: A. AMMAN 2752

[B. AMMAN 2442](#)

[C. AMMAN 1764](#)

[D. AMMAN 939](#)

[E. AMMAN 138](#)

Summary

[1](#)1. (U) On August 9, Alex Burkart, Deputy Director of the Office of Nuclear Energy, Safety and Security, Bureau of International Security and Nonproliferation (ISN/NESS), Jody Daniel, Office of Regional Affairs (ISN/RA), and Embassy Econoff held several meetings with Jordanian officials to discuss Jordan's interest in pursuing a peaceful nuclear power program (reftels). The delegation met with senior officials at the Ministry of Energy and Mineral Resources (MEMR), the Jordan Atomic Energy Commission (JAEC), and the National Electric Power Company (NEPCO). Overall, it appeared that while ready and willing to pursue a nuclear power program, under nonproliferation conditions the United States would find appropriate, the Government of Jordan lacks the funding to plan and regulate it.

Ministry of Energy and Mineral Resources (MEMR)

[1](#)2. (U) Khaldoun Qutishat, Secretary General of MEMR, explained that Jordan is exploring all energy options, including nuclear, in light of Jordan's growing energy demands (Ref B). Jordan's growing energy demands are compounded by the fact that Jordan imports over 95 percent of its energy, and 80 percent of electricity is generated from natural gas from Egypt. With the growing price of natural gas, Jordan's energy costs in 2006 accounted for more than 20 percent of its GDP.

[1](#)3. (SBU) Qutishat informed the delegation that if the GOJ pursued nuclear power, MEMR was interested in a Build-Own-Operate (BOO) concept in which the privately owned and operated nuclear power plant would sell electricity to the government owned electric power distribution company, National Electric Power Company (NEPCO). This follows the Independent Power Producer model that is already in effect for AES/Mitsui (Ref E). The Ministry would provide the company with a guaranteed price and market share necessary for the company to be profitable. Qutishat said that the Ministry did not have a problem with the reactor being owned by a foreign company.

¶4. (SBU) The Ministry is planning on a nuclear power plant of about 400 MWe being on line around 2020. Acknowledging that the reactor should represent no more than 10-12 percent of the entire capacity in case of maintenance or shut down, Qutishat said this size plant would fit within the anticipated grid size of nearly 4000 MWe. He added that Jordan was considering using some of the power from the reactor for desalination, but he well understood the problems of having too large a plant for the grid.

¶5. (SBU) Burkart asked Qutishat if Jordan had considered the possibility of sharing a reactor with one or more of its neighbors. Qutishat said that Jordan had not considered it, but, noting that Jordan has had a linked grid with Egypt for twelve years, he acknowledged that this would be an idea worth exploring. Qutishat added that if a reactor located in Jordan were provide power to neighboring states, the GOJ could potentially look into a 600 MWe reactor. When Burkart asked about the possibility of sharing nuclear power with Israel, Qutishat said that it would be possible since Jordan's grid connects to the West Bank. However, Qutishat noted, opening the shared grid to Israel would require the unanimous consent of all current members of the grid network, including Syria.

¶6. (SBU) In addition to the discussions about the future of nuclear power in Jordan, Qutishat mentioned that the GOJ has begun exploring how to exploit Jordan's extensive oil shale reserves for generating electricity. According to Qutishat, over 77 percent of the world's oil shale is located in Jordan. As most of the oil is in deep shale or shallow shale with a high sulfur content, to date it has not been economical to extract the oil from the shale. However, with the rising cost of oil and newly developed technology, several companies are working with MEMR to explore the economic feasibility of this endeavor (Ref B).

Jordan Atomic Energy Commission (JAEC)

¶7. (SBU) During a visit to the JAEC, the delegation met with JAEC Director General Dr. Ziad Kodah, CEO of the new Jordan Energy Corporation (JEC) Riyad Bitar, and Dr. Ned Xoubi, Chairman of the Nuclear Engineering Department of Jordan University of Science and Technology (JUST). Kodah expressed strong desires for local content of a Jordanian nuclear power program and appeared less fixed on how Jordan might proceed in developing its nuclear ambitions. One of its goals is ensuring effective technology transfer and national participation in all phases. However, Kodah made clear that while JAEC was interested in recovering uranium from its extensive phosphate resources through JEC, it was not interested in uranium conversion, enrichment or fuel fabrication. Jordan would buy the fuel, but according to Kodah, Jordan's uranium reserve was a strategic asset and integral component of Jordan's future nuclear industry. When asked what types of U.S. assistance would be available for uranium exploration and characterization, the delegation said that would explore possibilities back in Washington.

¶8. (SBU) JAEC was less certain than MEMR about the size of the reactor and was considering a variety of types, including an on-line refueled CANDU from Canada. Kodah also pointed out that Jordan is already a party to the Non-Proliferation Treaty (NPT), a comprehensive safeguards agreement and an Additional Protocol and would consider other treaties as appropriate.

¶9. (U) Kodah said that although NEPCO had developed a national strategy to explore all option for addressing Jordan's future energy needs, Jordan needed an economic and technical feasibility study specific to nuclear power. JAEC is hoping to work with the IAEA through a 2008 Technical Cooperation project to develop such a study.

¶10. (U) According to Kodah, Jordan has established two independent entities to handle planning and regulation. It has begun the process of developing manpower through establishing a Nuclear Engineering degree program at the Jordan University of Science and Technology (JUST). As many of Jordan's existing experts are U.S. educated, JUST is talking to U.S. universities for assistance. (Note: On July 26, JUST signed an MOU with North Carolina State University proposing collaboration and exchanges in the field of nuclear engineering. We understand that JUST also has agreements with the University of Illinois, Virginia Tech, Ohio State and the University of California.) Xoubi made a request for USG support (a few million dollars in seed money) to begin acquisition of a small research reactor for training and isotope production. He suggested that a reactor of less than 5 MW would be appropriate, and mentioned General Atomics as a potential source. Jordanian interlocutors noted that there have also been extensive discussions with the IAEA, and Burkart highlighted IAEA Footnote A Projects and Fellowships as useful mechanisms for identifying needs and funding for technical cooperation. Burkart pointed out that Jordan should focus first on planning and regulation, and that localization should be focused first on supporting technologies that could later be used to foster non-nuclear development (e.g., high quality welders). As discussion explored various ways the United States might be helpful, Kodah stressed that JAEC's emphasis was on something near term and tangible as a demonstration of support.

¶11. (SBU) The delegation had anticipated more discussion of a U.S.-Jordan nuclear energy cooperation agreement, but the responsible Jordanian official was unavailable. Burkart provided a copy of the U.S.-Egypt agreement as a model. While ISN had thought an agreement would not be necessary for several years, Xoubi said that JUST would like to acquire a surplus sub-critical reactor. Such a transfer would require such a nuclear cooperation agreement if it came from the United States.

National Electric Power Company (NEPCO)

¶12. (SBU) Similar themes surfaced during the meeting with Dr. Ahmad Hiyasat, Managing Director of NEPCO, although NEPCO was less sure whether a nuclear power plant would be privately or government owned. Hiyasat also spoke in more detail about the linked grid Jordan shares with Turkey, Syria, Egypt, Libya, Lebanon and Iraq (Ref A). Hiyasat conveyed the same point as Qutishat had about the potential problems with sharing nuclear power with Israel: while Jordan would not object, Syria does not have a peace treaty with Israel and has objected previously to including Israel in the grid.
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